

Practice: 441 - Irrigation System, Microirrigation**Scenario: #1 - Row Crop with screen or disc filter****Scenario Description:**

The typical system is a permanent system, installed on vegetables crops installed on less than 6" below the ground surface. This system utilizes inline emitters. This permanent micro-irrigation system typically includes a filter (screen or disk filter), flow meter (optional), drip line or tape for laterals with manifold supply line with control valves and flush valves or ends and includes a pressure reducing/regulating valves and air vacuum release valves. This system starts with the filters including all required system components and water is delivered to plants at the surface or directly to the roots. The water supply line (main, submain etc.) from the water source to the filter station is an irrigation pipeline (430) and not included as part of this system. This system does not include the pump, power source, water source (well or reservoir), or chemigation equipment. The water supply does not require a media (sand) filter.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Before Situation:

Typical before irrigation situation would normally be an existing inefficient surface or sprinkler irrigation system on a cropped fields. The existing irrigation system would experience poor, non-uniform irrigation applications and significant water losses affecting both water quantity and water quality

After Situation:

A typical practice would be the installation of a drip irrigation system on a 1 acre vegetable field. The system lateral (dripperline or tape) spacing is typically 48 inches, 290' drip tape long x 38(150'/4') beds/ 1 tape/bed = 11,020 ft of tape. The system requires 2" pvc submains (CPS 430) with 1" manifolds for each zone (2), has fair-good quality water thus requiring 1 screen filter per zone, pressure reducer, air release valve at the front of each zone. This efficient irrigation system provides irrigation water directly to the plant root zone eliminating application losses resulting in a very high water application efficiency and properly designed, these systems are capable of very uniform water applications. There are two zones for one acre of veg. Note: component 1487 was selected for microirrigation tubing because the description will be updated to include above and below ground drip tape.

Scenario Feature Measure: Field Acres

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$3,411.93

Scenario Cost/Unit: \$3,411.93

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Trenching, Pipeline Plowing	1096	Includes equipment and labor for plowing small diameter lines in common earth (< 3")	Foot	\$1.11	150	\$166.50
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.09	4	\$76.36
Materials						
Valve, Pressure Relief	1042	Materials for <2" Pressure Relief Valve	Each	\$165.07	2	\$330.14
Pipe, HDPE, smooth wall, weight priced	1379	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	\$3.49	16.5	\$57.59
Micro Irrigation, buried drip tubing	1487	Tubing that is installed underground for Sub-surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in. Includes labor.	Foot	\$0.14	11020	\$1,542.80
Valve, Air Vacuum Release, Manual	1041	Materials for <2" Manual Air/Vacuum Relief Valve	Each	\$31.64	2	\$63.28
Ball Valve, 4"	1726	4" ball valve, metal body. Materials only.	Each	\$310.01	2	\$620.02

Materials

Micro Irrigation, screen filter, < 100 gpm	1617	Screen filter for Micro Irrigation used in small systems. Includes filter. No controls are included or needed.	Each	\$277.62	2	\$555.24
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Practice: 441 - Irrigation System, Microirrigation**Scenario: #2 - Row Crop with media filter <= 10 Acres****Scenario Description:**

The typical 10 acre permanent system, installed for vegetables crops installed on less than 6" below the ground surface. This system utilizes inline emitters. This permanent micro-irrigation system typically includes a sand media filter, flow meter (optional), dipperline or tape for laterals and header and manifold supply line and header with control valves and flush valves or ends and includes a pressure reducing/regulating valves and air vacuum release valves. This system starts with the filters including all required system components and water is delivered to plants at the surface or directly to the roots. The water supply line (main, submain etc.) from the water source to the filter station is an irrigation pipeline (430) and not included as part of this system. This system does not include the pump, power source, water source (well or reservoir), or chemigation equipment. The water supply does require a media (sand) filter.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Before Situation:

Typical before irrigation situation would normally be an existing inefficient surface or sprinkler irrigation system on cropped fields. The existing irrigation system would experience poor, non-uniform irrigation applications and significant water losses affecting both water quantity and water quality

After Situation:

A typical practice would be the installation of a drip irrigation system on a 10 acre vegetable field. The system lateral (dripperline or tape) spacing is typically 48 inches, 10* (290' drip tape long x 38(150'/4') beds/ 1 tape/bed) = 110,200 ft of tape. The system requires 2" pvc headers and 1" manifolds and 20 zones, has fair-good quality water thus requiring 1 screen filter per zone and pressure reducer at the beginning of each zone. This efficient irrigation system provides irrigation water directly to the plant root zone eliminating application losses resulting in a very high water application efficiency and properly designed, these systems are capable of very uniform water applications. There are two zones for one acre of veg. Note: component 1487 was selected for microirrigation tubing because the description will be updated to include above and below ground drip tape.

Scenario Feature Measure: Field Acre

Scenario Unit: Acre

Scenario Typical Size: 10

Scenario Cost: \$35,132.73

Scenario Cost/Unit: \$3,513.27

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Trenching, Pipeline Plowing	1096	Includes equipment and labor for plowing small diameter lines in common earth (< 3")	Foot	\$1.11	1500	\$1,665.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.09	40	\$763.60
Materials						
Valve, Pressure Relief	1042	Materials for <2" Pressure Relief Valve	Each	\$165.07	20	\$3,301.40
Valve, Air Vacuum Release, Manual	1041	Materials for <2" Manual Air/Vacuum Relief Valve	Each	\$31.64	10	\$316.40
Pipe, HDPE, smooth wall, weight priced	1379	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	\$3.49	165	\$575.85
Micro Irrigation, media filter	1482	Sand or media filter for Micro irrigation system. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station.	Each	\$2,449.98	1	\$2,449.98

Materials

Micro Irrigation, buried drip tubing	1487	Tubing that is installed underground for Sub-surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in. Includes labor.	Foot	\$0.14	110200	\$15,428.00
Ball Valve, 4"	1726	4" ball valve, metal body. Materials only.	Each	\$310.01	10	\$3,100.10
Pipe, PVC, 2", SCH 40	976	Materials: - 2" - PVC - SCH 40 - ASTM D1785	Foot	\$1.32	1500	\$1,980.00
Micro Irrigation, screen filter, < 100 gpm	1617	Screen filter for Micro Irrigation used in small systems. Includes filter. No controls are included or needed.	Each	\$277.62	20	\$5,552.40

Practice: 441 - Irrigation System, Microirrigation**Scenario: #3 - Row Crop with media filter > 10 Acres****Scenario Description:**

The typical 20 acre permanent system, installed for vegetables crops installed on less than 6" below the ground surface. This system utilizes inline emitters. This permanent micro-irrigation system typically includes a sand media filter, flow meter (optional), dipperline or tape for laterals and header and manifold supply line and header with control valves and flush valves or ends and includes a pressure reducing/regulating valves and air vacuum release valves. This system starts with the filters including all required system components and water is delivered to plants at the surface or directly to the roots. The water supply line (main, submain etc.) from the water source to the filter station is an irrigation pipeline (430) and not included as part of this system. This system does not include the pump, power source, water source (well or reservoir), or chemigation equipment. The water supply does require a media (sand) filter.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Before Situation:

Typical before irrigation situation would normally be an existing inefficient surface or sprinkler irrigation system on cropped fields. The existing irrigation system would experience poor, non-uniform irrigation applications and significant water losses affecting both water quantity and water quality

After Situation:

A typical practice would be the installation of a drip irrigation system on a 20 acre vegetable field. The system lateral (dripperline or tape) spacing is typically 48 inches, 20* (290' drip tape long x 38(150'/4') beds/ 1 tape/bed) = 22,0400 ft of tape.. The system requires 2" pvc headers and 1" manifolds and has 20 zones, has fair-good quality water thus requiring 1 screen filter per zone and pressure reducer at the beginning of each zone. This efficient irrigation system provides irrigation water directly to the plant root zone eliminating application losses resulting in a very high water application efficiency and properly designed, these systems are capable of very uniform water applications. There are two zones for one acre of veg. Note: component 1487 was selected for microirrigation tubing because the description will be updated to include above and below ground drip tape.

Scenario Feature Measure: Field Acre

Scenario Unit: Acre

Scenario Typical Size: 20

Scenario Cost: \$67,815.48

Scenario Cost/Unit: \$3,390.77

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Trenching, Pipeline Plowing	1096	Includes equipment and labor for plowing small diameter lines in common earth (< 3")	Foot	\$1.11	3000	\$3,330.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.09	80	\$1,527.20
Materials						
Ball Valve, 4"	1726	4" ball valve, metal body. Materials only.	Each	\$310.01	20	\$6,200.20
Micro Irrigation, screen filter, < 100 gpm	1617	Screen filter for Micro Irrigation used in small systems. Includes filter. No controls are included or needed.	Each	\$277.62	40	\$11,104.80
Micro Irrigation, buried drip tubing	1487	Tubing that is installed underground for Sub-surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in. Includes labor.	Foot	\$0.14	220400	\$30,856.00
Pipe, HDPE, smooth wall, weight priced	1379	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	\$3.49	330	\$1,151.70
Valve, Pressure Relief	1042	Materials for <2" Pressure Relief Valve	Each	\$165.07	40	\$6,602.80

Materials

Valve, Air Vacuum Release, Manual	1041	Materials for <2" Manual Air/Vacuum Relief Valve	Each	\$31.64	20	\$632.80
Pipe, PVC, 2", SCH 40	976	Materials: - 2" - PVC - SCH 40 - ASTM D1785	Foot	\$1.32	3000	\$3,960.00
Micro Irrigation, media filter	1482	Sand or media filter for Micro irrigation system. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station.	Each	\$2,449.98	1	\$2,449.98

Practice: 441 - Irrigation System, Microirrigation**Scenario: #4 - Vineyard and orchards-disc or screen filter****Scenario Description:**

A micro-irrigation system, utilizing surface PE tubing (can be placed on trellis or above ground or heavy duty drip tubing) with emitters to provide irrigation for an orchard, vineyard, or other specialty crop grown in a grid pattern. The typical system is a permanent system, installed on a 60 acre vineyard on the ground surface or trellis. The vineyard has a plant spacing of 8 feet x 9 feet. Laterals are spaced 9 feet apart. This system utilizes emitters at each tree or plant as the water application device. This system typically includes a filter system, PE tubing laterals, PVC manifolds, and submains, valves, fittings, emitters, etc. This practice applies to systems designed to discharge < 60 gal/hr at each individual lateral discharge point. Does not include Pump, Power source, Water source (well or reservoir).

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 433 - Irrigation Flow Measurement, 610 - Salinity & Sodic Soil Management, 434 - Soil Moisture Measurement, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Before Situation:

A vineyard has an inefficient surface flood irrigation system causing irrigation water loss that impacts water quality and water quantity.

After Situation:

A surface placed microirrigation system is utilized to provide highly efficient irrigation to an vineyard. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on site water use is reduced.

Scenario Feature Measure: Acres

Scenario Unit: Acre

Scenario Typical Size: 60

Scenario Cost: \$289,983.96

Scenario Cost/Unit: \$4,833.07

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials						
Pipe, PVC, dia. < 18", weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only.	Pound	\$1.42	4800	\$6,816.00
Flow Meter, with Electronic Index	1452	10 inch Turbine Irrigation flow meter, with Electronic Index, Rate and Volume, permanently installed. Materials only.	Each	\$3,403.71	1	\$3,403.71
Micro Irrigation, screen filter, ≥ 100 gpm	1484	Screen filter for Micro irrigation system with 100 gpm or greater capacity. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station.	Each	\$313.85	2	\$627.70
Micro Irrigation, control valves and timers	1485	Automatic controller and timer, to turn on and off the sets for micro irrigation, installation and valves. Based on control unit, not number of valves controlled.	Each	\$1,223.75	1	\$1,223.75
Micro Irrigation, surface drip tubing or tape	1488	Tubing or Tape is installed above ground for surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in.	Foot	\$0.87	319440	\$277,912.80

Practice: 441 - Irrigation System, Microirrigation**Scenario: #5 - Vineyard and orchards-media filter-automated****Scenario Description:**

A micro-irrigation system, utilizing surface PE tubing (can be placed on trellis or above ground or heavy duty drip tubing) with emitters to provide irrigation for an orchard, vineyard, or other specialty crop grown in a grid pattern. The typical system is a permanent system, installed on a 60 acre vineyard on the ground surface or trellis. The vineyard has a plant spacing of 8 feet x 9 feet. Laterals are spaced 9 feet apart. This system utilizes emitters at each tree or plant as the water application device. This system typically includes a filter system, PE tubing laterals, PVC manifolds, and submains, valves, fittings, emitters, etc. This practice applies to systems designed to discharge < 60 gal/hr at each individual lateral discharge point. Does not include Pump, Power source, Water source (well or reservoir).

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 433 - Irrigation Flow Measurement, 610 - Salinity & Sodic Soil Management, 434 - Soil Moisture Measurement, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Before Situation:

A vineyard has an inefficient surface flood irrigation system causing irrigation water loss that impacts water quality and water quantity.

After Situation:

A surface placed microirrigation system is utilized to provide highly efficient irrigation to an vineyard. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on site water use is reduced.

Scenario Feature Measure: Acres

Scenario Unit: Acre

Scenario Typical Size: 60

Scenario Cost: \$293,343.84

Scenario Cost/Unit: \$4,889.06

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials						
Micro Irrigation, screen filter, ≥ 100 gpm	1484	Screen filter for Micro irrigation system with 100 gpm or greater capacity. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station.	Each	\$313.85	1	\$313.85
Pipe, PVC, dia. < 18", weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only.	Pound	\$1.42	4800	\$6,816.00
Micro Irrigation, surface drip tubing or tape	1488	Tubing or Tape is installed above ground for surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in.	Foot	\$0.87	319440	\$277,912.80
Micro Irrigation, media filter	1482	Sand or media filter for Micro irrigation system. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station.	Each	\$2,449.98	1	\$2,449.98
Micro Irrigation, control valves and timers	1485	Automatic controller and timer, to turn on and off the sets for micro irrigation, installation and valves. Based on control unit, not number of valves controlled.	Each	\$1,223.75	2	\$2,447.50
Flow Meter, with Electronic Index	1452	10 inch Turbine Irrigation flow meter, with Electronic Index, Rate and Volume, permanently installed. Materials only.	Each	\$3,403.71	1	\$3,403.71

Practice: 441 - Irrigation System, Microirrigation**Scenario: #6 - Vineyard and orchards-media filter-nonautomated****Scenario Description:**

A micro-irrigation system, utilizing surface PE tubing (can be placed on trellis or above ground or heavy duty drip tubing) with emitters to provide irrigation for an orchard, vineyard, or other specialty crop grown in a grid pattern. The typical system is a permanent system, installed on a 60 acre vineyard on the ground surface or trellis. The vineyard has a plant spacing of 8 feet x 9 feet. Laterals are spaced 9 feet apart. This system utilizes emitters at each tree or plant as the water application device. This system typically includes a filter system, PE tubing laterals, PVC manifolds, and submains, valves, fittings, emitters, etc. This practice applies to systems designed to discharge < 60 gal/hr at each individual lateral discharge point. Does not include Pump, Power source, Water source (well or reservoir).

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 433 - Irrigation Flow Measurement, 610 - Salinity & Sodic Soil Management, 434 - Soil Moisture Measurement, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Before Situation:

A vineyard has an inefficient surface flood irrigation system causing irrigation water loss that impacts water quality and water quantity.

After Situation:

A surface placed microirrigation system is utilized to provide highly efficient irrigation to an vineyard. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on site water use is reduced.

Scenario Feature Measure: Acres

Scenario Unit: Acre

Scenario Typical Size: 60

Scenario Cost: \$290,896.34

Scenario Cost/Unit: \$4,848.27

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials						
Micro Irrigation, surface drip tubing or tape	1488	Tubing or Tape is installed above ground for surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in.	Foot	\$0.87	319440	\$277,912.80
Pipe, PVC, dia. < 18", weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18". Materials only.	Pound	\$1.42	4800	\$6,816.00
Flow Meter, with Electronic Index	1452	10 inch Turbine Irrigation flow meter, with Electronic Index, Rate and Volume, permanently installed. Materials only.	Each	\$3,403.71	1	\$3,403.71
Micro Irrigation, screen filter, ≥ 100 gpm	1484	Screen filter for Micro irrigation system with 100 gpm or greater capacity. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station.	Each	\$313.85	1	\$313.85
Micro Irrigation, media filter	1482	Sand or media filter for Micro irrigation system. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station.	Each	\$2,449.98	1	\$2,449.98

Practice: 441 - Irrigation System, Microirrigation**Scenario: #7 - Hoop House****Scenario Description:**

A typical micro-irrigation system, installed in a high tunnel, utilizes surface or subsurface (2-3" under mulch dripline) or PE tubing placed on trellis or above ground with emitters placed to provide irrigation for specialty crop grown in hoop houses. The typical system is a permanent system, installed in a 30' x 50' house with laterals placed every 2'. This system typically includes a filter system, PE tubing laterals, PVC manifolds, and submains, valves, fittings, emitters, etc. This practice applies to systems designed to discharge < 12 gal/hr at each individual lateral discharge point. Does not include Pump, Power source, Water source (well or reservoir).

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 433 - Irrigation Flow Measurement, 610 - Salinity & Sodic Soil Management, 434 - Soil Moisture Measurement, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 433 - Irrigation Flow Measurement, 610 - Salinity & Sodic Soil Management, 434 - Soil Moisture Measurement, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Before Situation:

Irrigation of hoop house crops is done using manual irrigation methods such as a garden hose or water pail. Requires a great amount of time and many times plants are over watered in areas and underwatered in others. Inefficient use of irrigation water is a concern.

After Situation:

A micro irrigation system is in place that provides uniform water distribution throughout the 30' x 50' house so that all crops will receive adequate and timely irrigation water.

Scenario Feature Measure: per Hoop House

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$493.58

Scenario Cost/Unit: \$493.58

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.09	2	\$38.18
Materials						
Micro Irrigation, screen filter, < 100 gpm	1617	Screen filter for Micro Irrigation used in small systems. Includes filter. No controls are included or needed.	Each	\$277.62	1	\$277.62
Micro Irrigation, drip irrigation system, small scale	2170	Permanently installed above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	\$0.11	1500	\$165.00
Pressure Regulator	2468	Materials for pressure regulator less than or equal to 2" diameter.	Each	\$12.78	1	\$12.78